

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A process for the purification of acrylic acid obtained by catalytic or redox oxidation of a propylene and/or acrolein gas substrate, from a gas mixture (1) resulting from said oxidation ~~comprising~~ comprising mainly propylene, when the substrate comprises propylene, ultimate oxidation products, acrylic acid, acrolein, steam, acetic acid and heavy products from side reactions, wherein:
- the reaction gas mixture (1) is sent to the bottom of an absorption column (C1), which column is fed countercurrentwise at the top with at least one heavy hydrophobic absorption solvent, in order to obtain:
 - at the top of ~~the~~ said column (C1), a gas flow (7) composed of propylene and ~~the~~ ultimate oxidation products of the mixture (1), major amounts of water and of acetic acid, and acrolein; and
 - at the bottom of ~~the~~ said column (C1), a flow (4) composed of acrylic acid, the heavy absorption solvent, heavy products from side reactions, and minor amounts of acetic acid and of water;
 - the gas flow from the top (7) of ~~the~~ said absorption column (C1) is sent to a heat exchanger (C3), where it is brought into intimate contact with a descending liquid stream (8), fed at the top of the said heat exchanger (C3), comprising a previously cooled flow (9), recycled from the bottom of the heat exchanger (C3), in order to obtain, at the top of the heat exchanger (C3), a gas flow (10) comprising the compounds present in gas (7) to said heat exchanger (C3), in which most of the water and all the acetic acid are removed in flow (9) from the bottom of the heat exchanger (C3),
 - the flow (10) which contains acrolein is at least partially recycled to catalytic or redox oxidation ~~the reaction stage~~.

2. **(Previously Presented)** A process according to Claim 1, which at least one heavy hydrophobic absorption solvent having a boiling point at atmospheric pressure of greater than 200°C is used.

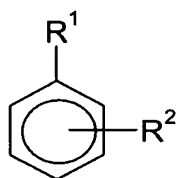
3. **(Previously Presented)** The process according to Claim 2, wherein the heavy hydrophobic absorption solvent is at least one nonhydrolysable hydrophobic aromatic compound having:

- a boiling point at atmospheric pressure of between 260°C and 380°C;
- a crystallization temperature of less than 35°C; and
- a viscosity of less than 10 mPa.s in a temperature range of 38-80°C.

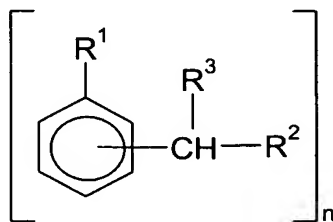
4. **(Previously Presented)** A process according to Claim 3, wherein the hydrophobic absorption solvent is a hydrophobic aromatic compound having a boiling point of between 270°C and 320°C.

5. **(Previously Presented)** A process according to Claim 3, said hydrophobic aromatic compound having a crystallization temperature of less than 0°C.

6. **(Previously Presented)** A process according to Claim 3, wherein the hydrophobic aromatic compound or compounds is/are represented by the general formulae (I) or (II):

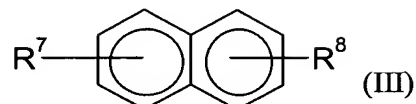


(I)



(II)

or those represented by the general formula (III):



in which:

- R⁷ represents hydrogen or C₁-C₄ alkyl; and
- R⁸ represented C₁-C₄ alkyl.

7. **(Previously Presented)** A process according to Claim 1, characterized in that the absorption column (C1) is fed with one or more pure solvents and/or with one or more solvents originating from a recycling of one or more flows obtained in subsequent purification stages.

8. **(Previously Presented)** A process according to Claim 1, wherein the absorption column (C1) comprises:

- in its lower part, at least one cooling zone (S1) and recirculating, through an external exchanger (E1), a portion (3) of a flow (4) collected in the lower part of the said section or sections (S1), in order to return it to the top of the said section or sections; and
- in its upper part, a zone (S2) comprising absorbing and rectifying the gas mixture (1).

9. **(Previously Presented)** A process according to Claim 1, wherein the absorption is carried out in the column (C1) at atmospheric pressure or at a pressure close to

atmospheric pressure and at a temperature for introducing the solvent or solvents of 20 to 100°C.

10. (Previously Presented) A process according to Claim 1, wherein the absorption is carried out in the column (C1) in the presence of at least one polymerization inhibitor.

11. (Previously Presented) A process according to Claim 10, wherein the inhibitor or inhibitors are chosen from phenol derivatives, such as hydroquinone and its derivatives, for example hydroquinone methyl ether, phenothiazine and its derivatives, such as methylene blue, quinones, such as benzoquinone, metal thiocarbamates, such as copper dibutyldithiocarbamate, compounds comprising nitroso groups, such as N-nitroso-phenylhydroxylamine, and amines, such as para-phenylenediamine derivatives.

12. (Previously Presented) A process according to Claim 1, a flow (4) resulting from the column (C1) is sent to a distillation column (C2), in which column distillation is carried out, in order to obtain:

- at the top, a flow (5) composed of the light impurities, which is returned to the lower part of the absorption column (C1); and
- at the bottom, a flow (6) composed of acrylic acid in solution in the absorption solvent or solvents, a low proportion of acetic acid, the heavy products from side reactions, and the polymerization inhibitor or inhibitors.

13. (Previously Presented) A process according to Claim 12, wherein the distillation is carried out in the column (C2) at a pressure of 2.66×10^3 Pa to 3.33×10^4 Pa, at a top temperature of 40-90°C and at a bottom temperature of 60-150°C.

14. (Previously Presented) A process according to Claim 1, wherein the heat exchanger (C3) is a direct contact condenser or a partial condensation column.

15. (Canceled)

16. (Previously Presented) A process according to Claim 1, wherein the heat exchange in the heat exchanger (C3) is conducted at atmospheric pressure or at a pressure close to atmospheric pressure and at a top temperature of 30-90°C, the percentage of removal of the water on the heat exchanger (C3) being from 20 to 80% by weight.